CIVIL QUALITY
CONSULTANTS & ENGINEERS
ISO 9001:2015 Certified & NABL Accredited
Laboratory as per ISO/IEC - 17025-2017

Testing of Construction Material - Mechanical, Soil, Bitumen, Non Destructive Testing Services, Project Management Consultants, Third Party Quality Assurance, DPR.

Job No.: CQCE/BBMP/MR/017/2021-22

Date: 02.05.2022

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client	**: Executive Engineer,** Project Division, RR Nagara Zone, BBMP, Bangalore.
Agency	**: M/s. M R Infra,** Contractor, Bangalore.
Consultant Agency	: M/s ESS ESS Builders
Name of the work	: Construction of Rajarajeshwari school (kalpana) building in ward no.17 J.P Park, BBMP, Bangalore.
Sample ID	: Cement Concrete (Third floor Chejja Concrete)
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	25.04.2022	02.05.2022	8.065	368.9	16.40
2	25.04.2022	02.05.2022	8.202	382.5	17.00
3	25.04.2022	02.05.2022	8.154	379.2	16.85

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A.E.E (P)
R.R. Nagar

For CIVIL QUALITY CONSULTANTS & ENGINEERS

Authorised Signatory

Corporate Off.: No. 133, Bhuvaneshwarinagar, Doddabasti Main Road, Bangalore-560 056.
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Testing of Construction Material - Mechanical, Soil, Bitumen, Non Destructive Testing Services, Project Management Consultants, Third Party Quality Assurance, DPR.

Job No.: CQCE/BBMP/MR/017/2021-22

Date: 23.05.2022

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client	: **Executive Engineer,** Project Division, RR Nagara Zone, BBMP, Bangalore.
Agency	: **M/s. M R Infra,** Contractor, Bangalore.
Consultant Agency	: M/s ESS ESS Builders
Name of the work	: Construction of Rajarajeshwari school (kalpana) building in ward no.17 J.P Park, BBMP, Bangalore.
Sample ID	: Cement Concrete (Third floor Chejja Concrete)
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	25.04.2022	23.05.2022	8.065	498.6	22.16
2	25.04.2022	23.05.2022	8.145	492.5	21.89
3	25.04.2022	23.05.2022	8.098	480.2	21.34

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Job No.: CQCE/BBMP/MR/017/2021-22

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Name of the work	: Construction of Rajarajeshwari school (kalpana) building in ward no.17 J.P Park, BBMP, Bangalore.
Sample ID	: Cement Concrete (Third floor Chejja Concrete)
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	25.04.2022	02.05.2022	8.140	380.2	16.90
2	25.04.2022	02.05.2022	8.008	379.6	16.87
3	25.04.2022	02.05.2022	8.169	392.1	17.43

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Testing of Construction Material - Mechanical, Soil, Bitumen, Non Destructive Testing Services, Project Management Consultants, Third Party Quality Assurance, DPR.

Job No.: CQCE/BBMP/MR/017/2021-22

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Client	: **Executive Engineer,** Project Division, RR Nagara Zone, BBMP, Bangalore.
Agency	: **M/s. M R Infra,** Contractor, Bangalore.
Consultant Agency	: M/s ESS ESS Builders
Name of the work	: Construction of Rajarajeshwari school (kalpana) building in ward no.17 J.P Park, BBMP, Bangalore.
Sample ID	: Cement Concrete (Third floor Chejja Concrete)
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	25.04.2022	23.05.2022	8.158	502.6	22.34
2	25.04.2022	23.05.2022	8.075	521.5	23.18
3	25.04.2022	23.05.2022	8.098	513.6	22.83

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Sample ID	: Cement Concrete (Third floor Chejja Concrete)
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	25.04.2022	02.05.2022	8.065	397.5	17.67
2	25.04.2022	02.05.2022	8.145	380.3	16.90
3	25.04.2022	02.05.2022	8.098	399.2	17.74

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Job No.: CQCE/BBMP/MR/017/2021-22

Date: 23.05.2022

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client	: **Executive Engineer,** Project Division, RR Nagara Zone, BBMP, Bangalore.
Agency	: **M/s. M R Infra,** Contractor, Bangalore.
Consultant Agency	: M/s ESS ESS Builders
Name of the work	: Construction of Rajarajeshwari school (kalpana) building in ward no.17 J.P Park, BBMP, Bangalore.
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Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	25.04.2022	23.05.2022	8.154	526.2	23.39
2	25.04.2022	23.05.2022	8.085	520.5	23.13
3	25.04.2022	23.05.2022	8.098	528.0	23.47

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Testing of Construction Material - Mechanical, Soil, Bitumen, Non Destructive Testing Services, Project Management Consultants, Third Party Quality Assurance, DPR.

Job No.: CQCE/BBMP/MRI/W.No.17/2022-23 Date 04.04.2022

TEST REPORT ON CERAMIC TILES

Client : **Executive Engineer,** Project Division R R Nagar Zone, BBMP, Bangalore.

Contractor Agency : **M/S M R Infra,** Bangalore.

Consultant Agency **M/S ESS ESS Builders,** Bangalore.

Name of Work : Construction of Rajarajeshwari School(Kalpana)Building in Ward No.17, J P Park, BBMP, Bangalore.

Technical Reference : IS: 13630 - 2006 - Method of Testing Ceramic Tiles
IS 15622 - 2006 - Specification of Ceramic Tiles

No. of Samples Tested : 05 (Five)

Date of Testing 31.03.2022 to 04.04.2022

I. MODULUS OF RUPTURE

Sl. No.	Measured Dimension (mm)	Modulus of Rupture (N/mm^2)	Average (N/mm^2)	Requirement as per IS: 15622 (Reaffirmed 2006)
1	300x300x5.2	48.2	47.54	Average 47, indivisual minimum 44 N/mm^2
2	300x300x5.3	47.3		
3	300x300x5.5	47.9		
4	300x300x5.6	46.8		
5	300x300x5.4	47.5		

II. CHEMICAL RESISTANCE

Sl. No.	Measured Dimension (mm)	Visual observations	Requirement as per IS: 15622 (Reaffirmed 2006)
1	300x300x5.2	No visible effect	Class AA, min (13630 Part 8)
2	300x300x5.3	No visible effect	
3	300x300x5.5	No visible effect	
4	300x300x5.6	No visible effect	
5	300x300x5.4	No visible effect	

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III. STAIN RESISTANCE

Sl. No.	Measured Dimension (mm)	Visual observations	Requirement as per IS: 15622 (Reaffirmed 2006)
1	300x300x5.2	Stain Removed by Water	Class 1, min (13630 Part 8)
2	300x300x5.3	Stain Removed by Water	
3	300x300x5.5	Stain Removed by Water	
4	300x300x5.6	Stain Removed by Water	
5	300x300x5.4	Stain Removed by Water	

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Testing of Construction Material - Mechanical, Soil, Bitumen, Non Destructive Testing Services, Project Management Consultants, Third Party Quality Assurance, DPR.

Job No.: CQCE/BBMP/MRI/W.No.17/2022-23 Date 09.03.2023

TEST REPORT ON FINE AGGREGATES (SAND)
IS 2116-1980

Client : **Executive Engineer,** Project Division R R Nagar Zone, BBMP, Bangalore.

Contractor Agency : **M/S M R Infra,** Bangalore.

Consultant Agency **M/S ESS ESS Builders,** Bangalore.

Name of Work : Construction of Rajarajeshwari School(Kalpana)Building in Ward No.17, J P Park, BBMP, Bangalore.

Date of Testing 09.03.2023

Material : Sand(Masonry) Total wt. of aggregates in gms = **1000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits as per IS 2116-1980
4.75	0	0.00	0.00	100.0	100
2.36	22	2.20	2.20	97.8	90-100
1.18	18	1.80	4.00	96.0	70-100
600 Micron	54	5.40	9.40	90.6	40-100
300 Micron	218	21.80	31.20	68.8	5-70
150 Micron	547	54.70	85.90	14.1	0-15

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Job No.: CQCE/BBMP/MRI/W.No.17/2022-23 Date 09.03.2023

TEST REPORT ON FINE AGGREGATES (SAND)
IS 1542-1992

Client : **Executive Engineer,** Project Division R R Nagar Zone, BBMP, Bangalore.

Contractor Agency : **M/S M R Infra,** Bangalore.

Consultant Agency **M/S ESS ESS Builders,** Bangalore.

Name of Work : Construction of Rajarajeshwari School(Kalpana)Building in Ward No.17, J P Park, BBMP, Bangalore.

Date of Testing 09.03.2023

Material : Sand(Plastering)

Total wt. of aggregates in gms = **1000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits as per IS 1542-1992
10	0	0	0	100	100
4.75	23	2.30	2.30	97.7	95-100
2.36	24	2.40	4.70	95.3	95-100
1.18	39	3.90	8.60	91.4	90-100
600 Micron	78	7.80	16.40	83.6	80-100
300 Micron	214	21.40	37.80	62.2	20-65
150 Micron	529	52.90	90.70	9.3	0-15

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Testing of Construction Material - Mechanical, Soil, Bitumen, Non Destructive Testing Services, Project Management Consultants, Third Party Quality Assurance, DPR.

Job No.: CQCE/BBMP/MRI/W.No.17/2022-23 Date 09.03.2022

TEST REPORT OF PHYSICAL PROPERTIES OF REINFORCEMENT STEEL

Client : **Executive Engineer,** Project Division R R Nagar Zone, BBMP, Bangalore.

Contractor Agency : **M/S M R Infra,** Bangalore.

Consultant Agency **M/S ESS ESS Builders,** Bangalore.

Name of Work : Construction of Rajarajeshwari School(Kalpana)Building in Ward No.17, J P Park, BBMP, Bangalore.

Steel Dia/Length : 8mm,10mm,12mm,16mm" TMT"

Reference to BIS codes : IS 1786:2008(RA 2013) High Strength Deformed Steel Bars and Wires for Concrete Reinforcement-Specification

: IS 1608:2005 Metallic Materials- Tensile Testing at Ambient Temperature

Date of test 09.03.2022

S.No	Brand	Nominal size (dia in mm)	Mass per meter (kg/meter)	TENSILE STRENGTH			
				0.20 % proof stress/ yield stress (N/mm^2)	Tensile strength (N/mm^2)	TS/YS ratio	Elongation, percent on gauge length
1	TMT	8	0.397	524	613	1.17	19
2	TMT	10	0.617	516	607	1.18	21
3	TMT	12	0.889	509	624	1.23	24
4	TMT	16	1.581	529	611	1.16	18

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